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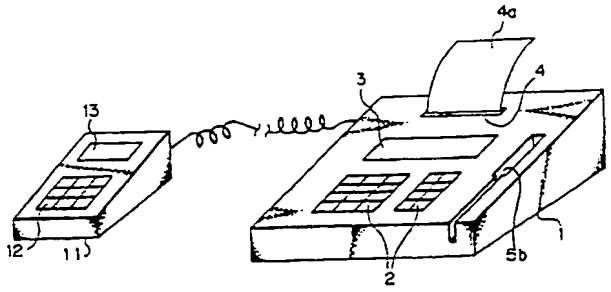
(54) Proceeds processing apparatus requesting a customer to confirm proceeds processing.

(57) A proceeds processing apparatus has an apparatus body (1), and a keyboard (2) and a card reader (5) provided on the apparatus body (1) for entering first data indicative of the contents of a transaction. An operation control (7) is accommodated in the apparatus body (1) for executing data processing including proceeds processing by performing arithmetic operations with inputted data. A display (3) and a printer (4) are provided on the apparatus body and interconnected to the operation control (7) for outputting the result of data processing. A customer-oriented input unit (11) has a keyboard (12) and a control (14) for inputting second data for determining whether or not the first data entered are agreed to. An interface (8) and a cable (16) electrically interconnect the keyboard (12) and the control (14) to the operation control (7). The operation control (7) determinines, in response to the second data fed from the keyboard (12) and the control (14), whether or not the first data are agreed to on the basis of the second data and feeds a result of decision to the display (3) and printer (4).

Fig. 1



EP 0 397 095 A2

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a cash register or similar proceeds processing apparatus.

Description of the Prior Art

A proceeds processing apparatus such as a cash register is usually installed in a store or similar facility and operated by an attendant or a clerk to enter article codes, amounts of money, etc. In response, the apparatus executes proceeds processing including summation of the amounts of money, receipt of money, issuance of a detailed account, and totalization. Proceeds processing apparatus applicable to a POS system is interconnected to a host data processing apparatus by a communication line to interchange transaction data with the latter. With this kind of proceeds processing apparatus, it is possible to debit a customer's account when a credit card is used or to settle accounts even when a debit card is used.

A prior art proceeds processing apparatus has a body which is composed of a keyboard and/or a scanner for entering article codes, amounts of money and so forth, a display for displaying article codes, amounts of money and so forth as well as operation guidances, a printer for printing out transaction data on a recording medium to issue a detailed account or receipt, and a card reader having a slot for receiving a card and reading data out of the card. An operation control unit controls such components of the apparatus to sum the individual amounts of money and settle the accounts. A communication control unit is interconnected to the operation control unit while a communication line is interconnected to the communication control unit, whereby the communication of the apparatus with a host computer is controlled.

A proceeds processing operation available with the above construction is as follows. When an attendant or a clerk starts up the apparatus by, for example, turning on the power switch of the apparatus, a guidance meant for the attendant appears on the display. Guided by the guidance, the attendant enters amounts of money and other similar data on the keyboard or via the card reader. In response, the apparatus totalizes the inputted data and communicates with the host computer to execute proceeds processing. The contents of the proceeds processing are printed out on a recording medium by the printer to produce a detailed account, e. g. a receipt.

A problem with the prior art proceeds processing apparatus is that usually a customer at a store, for example, cannot see the contents of a transaction processed by the apparatus until a receipt issued after a sequence of proceeds processing has been handed to the customer. More specifically, a customer is not allowed to compare the contents of a transaction processed by the apparatus with those of the actual transaction until a receipt has been issued. Assume that the result of processing executed by the apparatus differs from the contents of the actual transaction due to the attendant's erroneous operations of keys. Then, the customer in many cases cannot find the error until the customer receives a detailed account. In such a case, the attendant has to cancel the entire proceeds processing executed by the apparatus and start inputting all the necessary again.

A current trend in business transactions including shopping is toward the use of credit cards and cash cards in place of cash. With such a card, it is likely that the prior art proceeds processing apparatus finishes processing without allowing a customer to carefully check at the point of time (counter) the contents of a transaction which are entered by an attendant. Actually, it often occurs that a customer does not notice incorrect processing executed by the apparatus until the store debits the customer's account later, for example.

As stated above, the prior art proceeds processing apparatus is not satisfactory in various aspects such as efficient processing, customer service, and mutual reliance between customers and facilities.

A proceeds processing apparatus which guarantees the issuance of a detailed account of a transaction is disclosed in Japanese Patent Laid-Open Publication No. 157995/1986. The apparatus disclosed in this Laid-Open Publication is constructed such that until a detailed account of a transaction has been issued and an exclusive operation for confirming the receipt thereof has been performed, processing associated with the next transaction cannot be done. This is successful in, for example, preventing a person from unjustly including data of a certain transaction in the processing of the subsequent transaction.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a proceeds processing apparatus which allows a customer to confirm the contents of proceeds processing entered by an attendant at the spot of transaction, while enhancing proceeds processing efficiency.

A proceeds processing apparatus of the present invention comprises a first casing, a first

input device provided on the first casing for entering first data indicative of the contents of a transaction, an operation control accommodated in the first casing for executing data processing including proceeds processing by performing arithmetic operations with inputted data, an output device provided on the first casing and interconnected to the operation control for outputting the result of data processing, a second input device provided on the second casing for inputting second data for determining whether or not the first data entered on the first input device is agreed to, and an interconnecting device for electrically interconnecting the second input device to the operation control. The operation control determines, in response to the second data fed from the second input device, whether or not the first data entered on the first input device is agreed to on the basis of the second data and feeds the result of decision to the output device.

In the above construction, when transaction data is entered on the first input device, the operation control executes processing necessary for proceeds processing on the basis of the transaction data. In this instant, when the second input device is operated to enter an input for checking the contents of the transmission data, the operation control determines whether or not the transmission data is agreed to on the basis of the input on the second input device. This allows a customer to check at the spot the contents of a transaction entered on the apparatus by an attendant, thereby enhancing the chance that the customer finds out errors.

BRIEF DESCRIPTION OF THE DRAWINGS

The objects and features of the present invention will become more apparent from the consideration of the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a proceeds processing apparatus embodying the present invention;

FIG. 2 is a block diagram schematically showing the functional construction of the embodiment shown in FIG. 1;

FIG. 3 is a front view of a customer-oriented input unit of the illustrative embodiment;

FIGS. 4A and 4B, when combined as shown in FIG. 4, are a flowchart demonstrating a specific operation flow of an operation control included in the embodiment;

FIG. 5 is a flowchart similar to FIG. 4, showing an alternative control flow which is also practicable with the illustrative embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2 of the drawings, a proceeds processing apparatus embodying the present invention is shown and generally made up of an attendant-oriented apparatus body 1 and a customer-oriented input unit 11. The apparatus of the illustrative embodiment may be installed in a store or similar facilities. The apparatus body 1 is operated by an attendant such as a clerk of a store to enter article codes and amounts of money and so forth, and executes various kinds of proceeds processings which include summing the amounts of money, receiving money, issuing a detailed account, and totalization. This apparatus body 1 includes a keyboard 2 accessible for entering article codes, amounts of money, numbers of individual articles, and other data associated with a transaction. The keyboard 2 is interconnected to an operation control 7 which sums the amounts of money and settles accounts, performs arithmetic operations such totalization, and supervises the entire apparatus. The apparatus body 1 further includes a display 3 and a printer 4 which are also interconnected to the operation control 7. The display 3 displays the amounts of money and other transaction data as well as messages for guiding the operator, under the control of the operation control 7. The printer 4 prints out transaction data on a recording medium to thereby produce a detailed account or receipt 4a.

The proceeds processing apparatus is interconnected to a host computer or similar host data processing system, not shown, by a communication line 6a in order to interchange transaction data with the data processing system. The apparatus is, therefore, capable of settling accounts with a card 5a which may be a credit card or a debit card, for example. For this purpose, the apparatus body 1 has a card reader 5 which is provided with a slot 5b for receiving the card 5a. The card reader 5 reads data out of the card 5a when the latter is inserted in the slot 5b. The card 5a is implemented as a card-like medium capable of storing data therein, e. g. a magnetic card, IC card, or optical card. The card reader 5 is also interconnected to the operation control 7. Further interconnected to the operation control 7 is a communication control unit 6. The communication line 6a is accommodated in the communication control unit 6 so as to control the communication of the apparatus with the host. The components 2, 3, 4, 5 and 6 described above are housed in a single casing 1.

The customer-oriented input unit 11 basically is located at the same place as the apparatus body 1 and in principle operated by a customer for confirming transaction data. The input unit 11 has a

display 13 for allowing a customer to see data included in a transaction as well as a customer's PIN (Personal Identification Number) entered, and a keyboard or keypad 12 which a customer may operate to enter instructions for confirmation or data as well as his or her PIN.

In the illustrative embodiment, an interface 8 is incorporated in the apparatus body 1. The customer-oriented input unit 11 is interconnected to the operation control 7 via the interface 8 by a cable 16. The operation control 7 has a function of determining whether or not the processing associated with a certain transaction is approvable, in response to data entered on the input unit 11. If desired, the cable 16 may be replaced with a wireless link which uses a radio wave.

As a clerk or similar attendant starts up the proceeds processing apparatus by performing a predetermined operation such as the turn-on of a power switch of the apparatus, a guidance or message appears on the display 3 of the apparatus body. Then, guided by the message, the attendant enters the amounts of money and other necessary data associated with a transaction on the keyboard 2 or via the card reader 5.

The customer-oriented input unit 11 comprises a control 14 in addition to the keyboard 12 and display 13. When a customer enters an amount of money relating to a transaction on the keyboard 12, the amount appears on the display 13 and is sent to the operation control 7 of the apparatus body 1 via the interface 8.

Fig. 3 is an enlarged view of a panel or operation board which is provided on the top of the customer-oriented input unit 11. As shown, in the illustrative embodiment, the keyboard 12 has numeral keys 12c, a cancel key 12b, and a confirm key 12a. A customer enters an amount of money on the numeral keys 12c and then presses the confirm key 12a to indicate the end of the inputting operation. In the event when the customer has entered an incorrect numerical value inadvertently, the customer may press the cancel key 12b to cancel it and then reenter a correct numerical value.

The operation control 7 performs totalization and other arithmetic operations necessary for proceeds processing in response to proceeds data which the attendant enters on the keyboard 2 of the apparatus body 1. When the processing reaches a certain stage, the operation control 7 urges the customer to enter data on the customer-oriented input unit 11. On the entry of data on the input unit 11, the operation control 7 determines whether or not it should continue with the proceeds processing, on the basis of the entered data. If the result of the decision is positive, the operation control 7 executes totalization and, if necessary, communicates with the host over the communication control unit 6 and communication line 6a to execute proceeds processing. The contents of the proceeds processing are printed out on a detailed account or receipt 4a by the printer 4.

The operation of the proceeds processing apparatus having the above construction will be described with reference to FIGS. 4A and 4B. First, a proceeds processing mode is set up by the turn-on of the power switch of the apparatus body 1 or the manipulation of an exclusive key, not shown (step 601). In response, the operation control 7 displays on the display 3 a guidance for urging the operator or attendant to enter an amount of money, e. g. a message "INPUT AMOUNT" (step 602). As soon as the attendant enters an amount of money as guided by the message (step 603), the amount appears on the display 3 (step 604). The entered amount of money is written to a store built in the operation control 7 (step 605). Subsequently, a guidance in the form of a message "INPUT AMOUNT", for example, also appears on the display 13 of the customer-oriented input unit 11 (step 606). As the customer enters an amount of money on the keyboard 12 of the input unit 11 (step 607), the operation control 7 compares it with the amount written to the store as stated above (step 608) to see if the two amounts compare equal (step 609). If the result of decision at the step S609 is positive (Y), the operation control 7 decides that the transaction has been concluded (step 610). Then, the apparatus executes further processing. However, when the result of decision at the step S609 is negative (N), the operation control 7 determines whether or not non-coincidence has occurred a predetermined number of times (step 611). If the result of this decision at the step 611 is positive (Y), the operation control 7 decides that the transaction has not been concluded and inhibits the apparatus from executing further processing. If the number of times that non-coincidence has occurred is smaller than the predetermined value as decided in the step 611 (N), the program returns to the step 602.

The illustrative embodiment allows the customer to see the contents of a transaction on the input unit 11 at the spot. This enhances the chance that the customer immediately finds out incorrect transaction data which may be inputted inadvertently by the attendant on the apparatus body 1. Eventually, efficient proceeds processing is enhanced to offer better customer service. In addition, troubles often experienced in debiting the customer's account are eliminated, so that mutual reliance between customers and facilities is improved.

The control sequence of the operation control 7 may be programmed such that the display 13 of the customer-oriented input unit 11 displays an

amount of money entered by the attendant and thereby urges the customer to operate the input unit 11 for confirmation, instead of forcing the customer to enter an amount on the numeral keys 12. Such an alternative control flow is shown in FIG. 5. With the control flow of FIG. 5, the customer needs only to operate either one of the confirm key 12a and the cancel key 12b which are provided on the keyboard 12 of the input unit 11. More specifically, the customer looks at an amount of money indicated on the display 3 of the apparatus body 1 or on the display 13 of the customer-oriented unit 11 and, if it is correct, presses the confirm key 12a. If the amount appearing on the display 3 or 13 is not correct, the customer presses the cancel key 12b. In this manner, the customer may either agree to or reject the contents of a transaction having been entered by the attendant.

FIG. 5 is a flowchart showing the above-mentioned modified control sequence. The procedure begins with a step 701 in which a proceeds processing mode is set up by the turn-on of the power source of the apparatus body 1 or the operation of the exclusive key, not shown. Then, the display 3 of the apparatus body 1 displays a guidance for urging the attendant or clerk to enter an amount of money, e. g. "INPUT AMOUNT" (step 702). As the attendant enters an amount of money (step 703), the amount appears on the display 3 of the apparatus body 1 and on the display 13 of the customer-oriented input unit 11 (step 705).

In the above condition, the customer looks at either one of the displays 3 and 13 to see the amount of money (step 706) and then presses either one of the confirm key 12a and cancel key 12b provided on the keyboard 12 of the input unit 11 (step 707). In response, the operation control 7 determines which of the confirm key 12a and the cancel key 12b has been pressed (step 708) and, if it is the confirm key 12a that has been pressed, decides that the transaction has been concluded (step 709). Then, the apparatus executes further processing. When the operation control 7 determines that the cancel key 12b has been pressed, it decides that the transaction has not been concluded (step 710) and inhibits the apparatus from executing any further processing.

The procedure described above with reference to FIG. 5 is comparable with the procedure of FIG. 4 as to the advantages over the prior art. It is to be noted that although the operation flow of FIG. 5 is simpler than that of FIG. 4 so far as the customer's manipulations are concerned, the former compare somewhat unfavorably with the latter as to accurate checking because it does not allow the customer to enter an amount of money.

In summary, it will be seen that the present invention provides a proceeds processing apparatus with which a customer can confirm at the spot the contents of a transaction entered by an attendant, by using customer-oriented inputting means. The apparatus, therefore, relatively easily improves the proceeds processing efficiency, customer service, and mutual reliance between customers and facilities.

While the present invention has been described with reference to the particular illustrative embodiment, it is not to be restricted by the embodiment but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiment without departing from the scope and spirit of the present invention. Specifically, the present invention covers all the apparatuses of the kind having customer-oriented inputting means which may be operated by a customer for checking the contents of a transaction, and having a function of determining whether or not the contents of the transaction are acceptable on the basis of data fed from the customer-oriented inputting means. For example, the data to be entered on the customer-oriented inputting means may be the customer's PIN. In such a case, an arrangement may be made such that the customer confirms the content of a transaction by operating a confirm key, inserts a cash card or a credit card in the apparatus to enter its contents, and then enters the PIN for final consent on the customer-oriented inputting means.

Claims

1. A proceeds processing apparatus comprising:
a first casing (1) ;
first input means (2, 5) provided on said first casing (1) for entering first data indicative of contents of a transaction;
operation control means (7) accommodated in said first casing (1) for executing data processing including proceeds processing by performing arithmetic operations with inputted data; and
output means (3, 4) provided on said first casing (1) and interconnected to said operation control means (7) for outputting a result of data processing;
CHARACTERIZED BY
a second casing (11) ;
second input means (12, 14) provided on said second casing (11) for inputting second data for determining whether or not the first data entered on the first input means (2, 5) are agreed to; and
interconnecting means (8, 16) for electrically interconnecting said second input means (12, 14) to said operation control means (7) ;
said operation control means (7) determining, in

response to the second data fed from said second input means (12, 14) whether or not the first data are agreed to on the basis of said second data and feeding a result of decision to said output means (3, 4).

2. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said second input means (12, 14), comprises a first operating member (12c) for inputting data representative of at least a part of contents of a transaction as the second data;
said operation control means (7) determining whether or not the first data are agreed to by comparing the second data with the first data.

3. An apparatus in accordance with claim 2, CHARACTERIZED IN THAT said apparatus further comprises first display means (13) for displaying a message for urging entry of the second data on said first operating member (12c).

4. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said apparatus further comprises second output means (13, 14) provided on said second casing for receiving the first data inputted on said first input means (2, 5) and outputting the first data;
said second input means (12, 14) comprising second operating members (12a, 12b) for inputting as the second data indicative of whether or not the first data outputted to said second output means (13, 14) is agreed to.

5. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said apparatus further comprises communication control means (6) accommodated in said first casing (1) and interconnected between said operation control means (7) and a communication line (6a) to be connected to a host data processing apparatus controlling interchange of data between said operation control means (7) and the communication line (6a) ; said operation control means (7) cooperating with the data processing apparatus to execute data processing.

6. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said first input means (2, 5) further comprises card reader means (5) provided on said first casing (1) and interconnected to said operation control means (7) for reading data out of a card-like storing medium (5a) and feeding said read data to said operation control means (7) as at least a part of the first data.

7. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said output means (3, 4) further comprises printer means (4) for printing out the result of data processing on a recording medium (4a).

8. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said output means (3, 4) further comprises display means (3) for displaying a guidance for the operation of said first output means (2, 5) the first data, and the result of data processing.

9. An apparatus in accordance with claim 1, CHARACTERIZED IN THAT said interconnecting means (8, 16) further comprises:
interface means (8) interconnected to said operation control means (7) for interfacing said operation control means (7) and said second input means (12, 14) to each other; and
a cable (16) for electrically interconnecting said interface means (8) and said second input means (12, 14).

Fig. 1

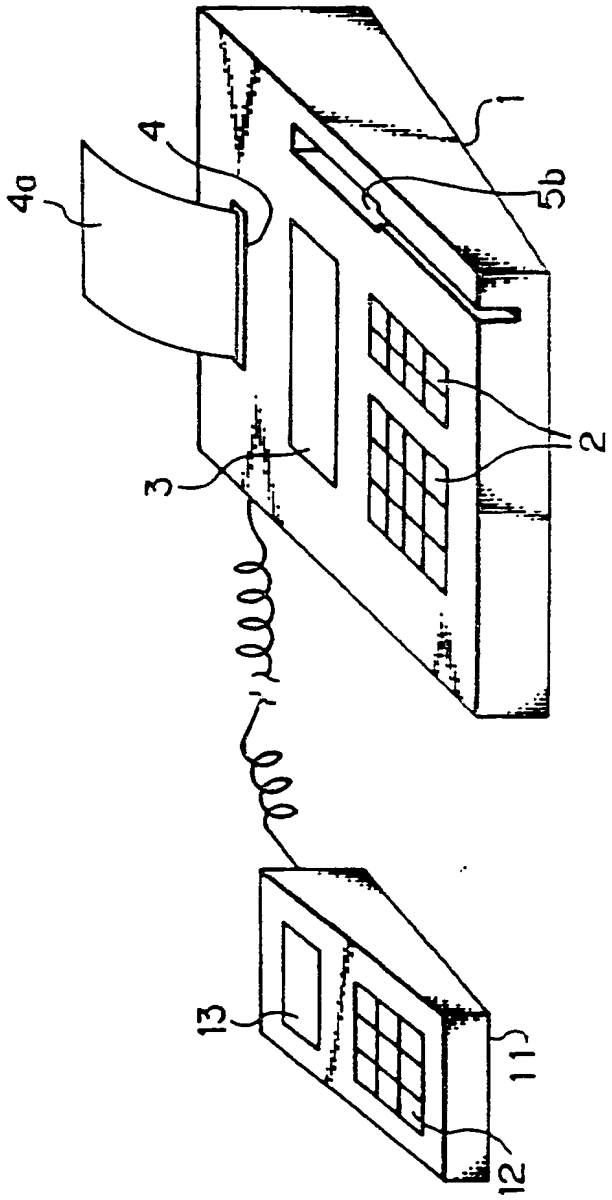


Fig. 2

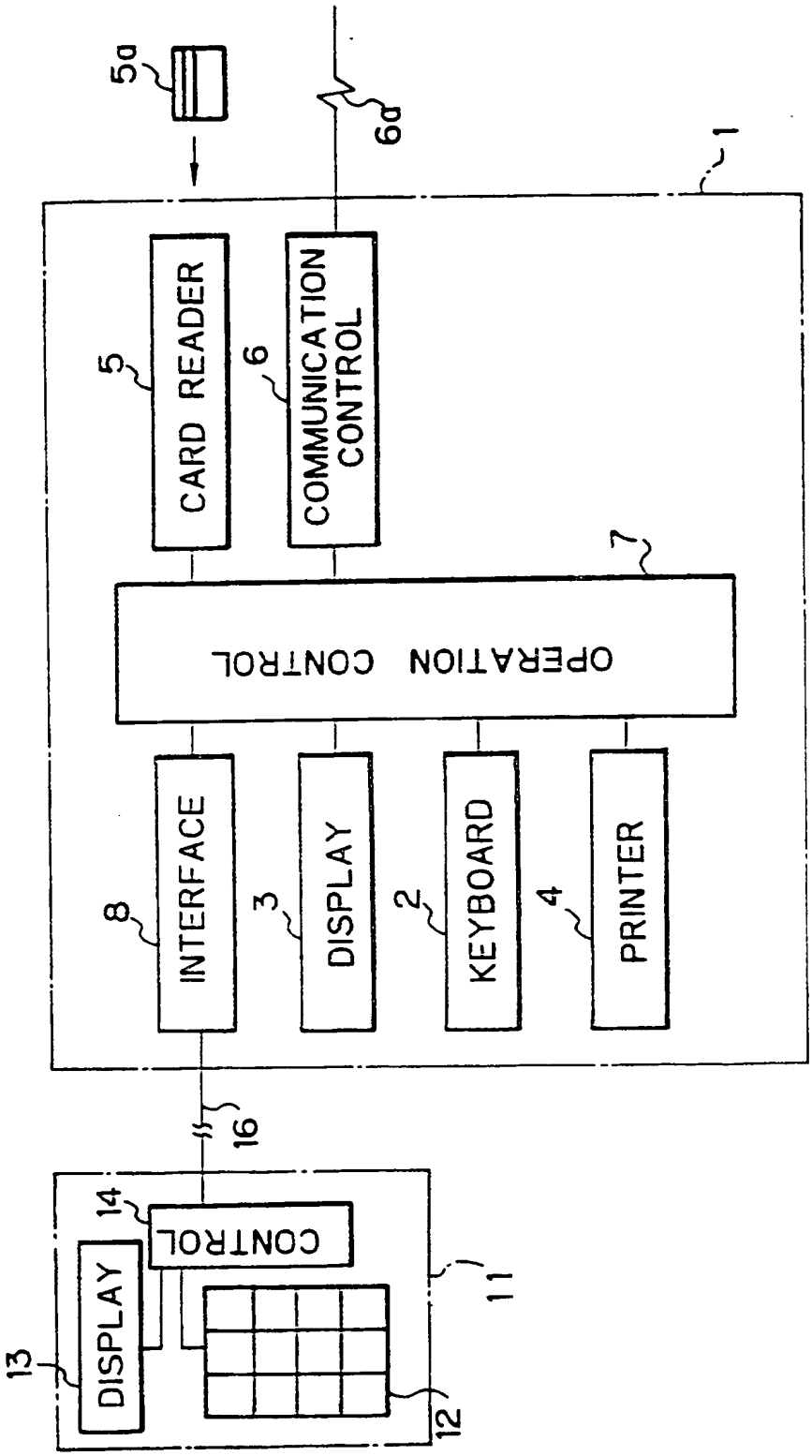

5a
6a
1
CARD READER
5
COMMUNICATION CONTROL
6
7
OPERATION CONTROL
INTERFACE
8
DISPLAY
3
KEYBOARD
2
PRINTER
4
16
CONTROL
14
DISPLAY
13
11
12

Fig. 3

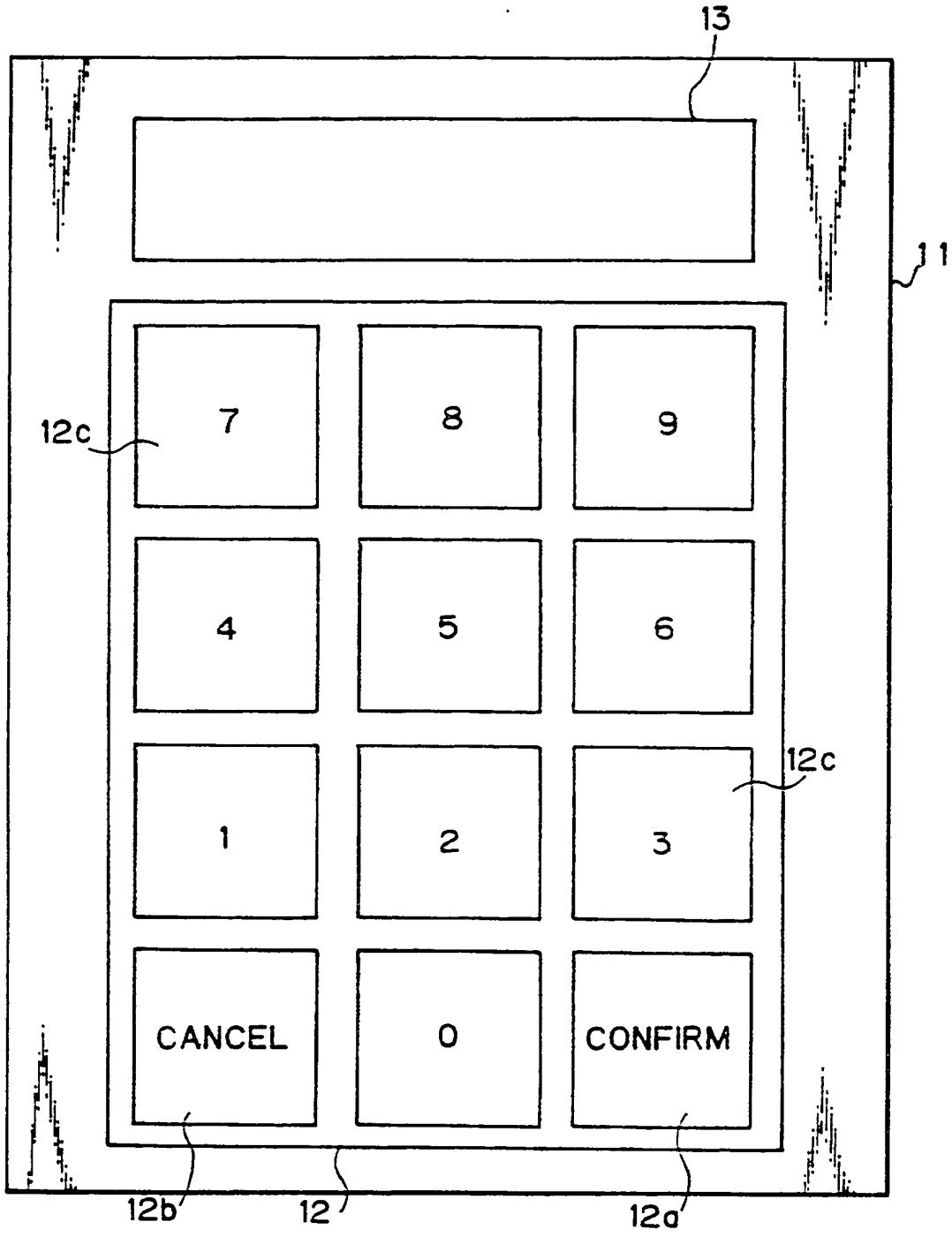


Fig.4

Fig.4A

Fig.4B

Fig. 4A

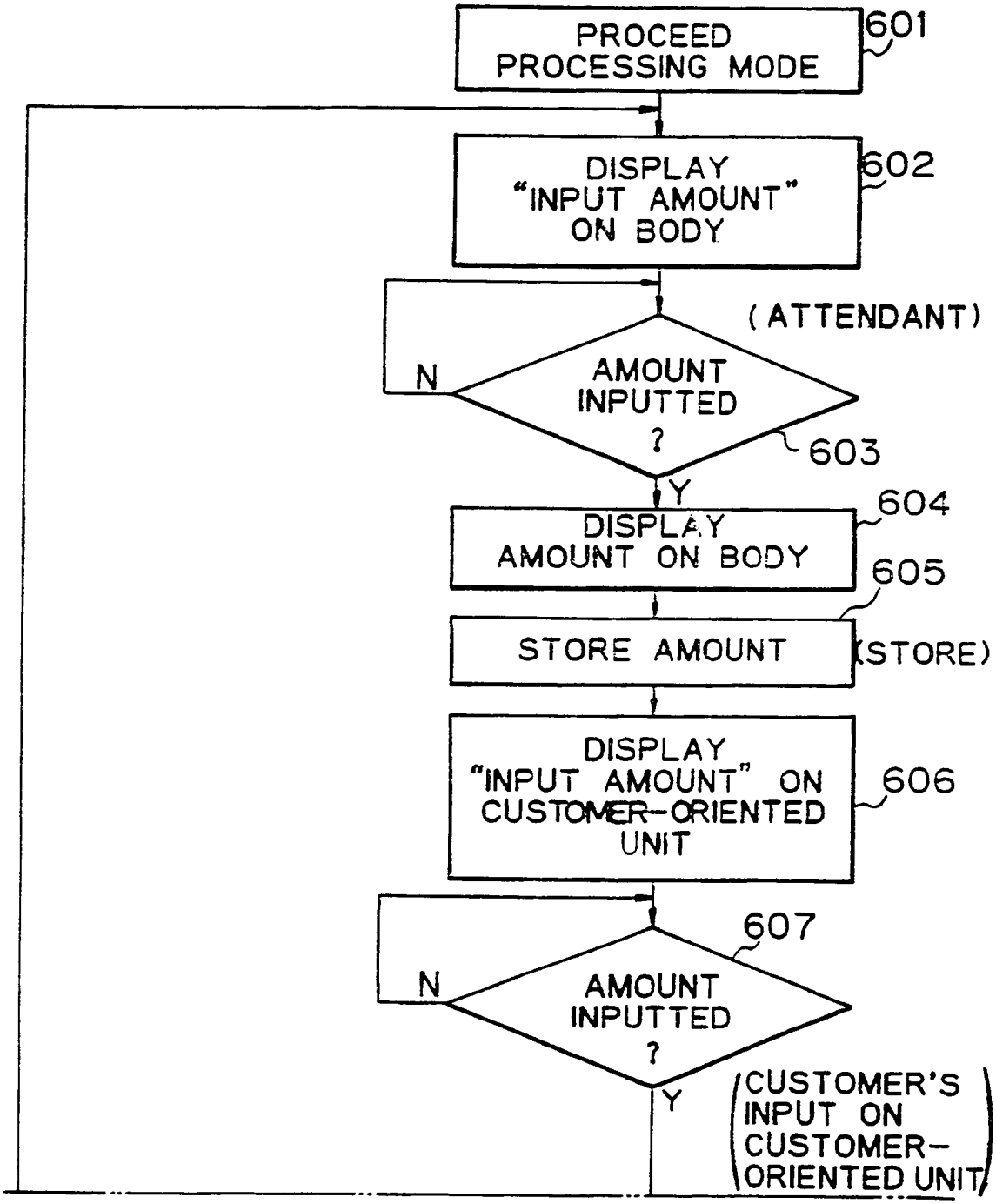


Fig. 4B

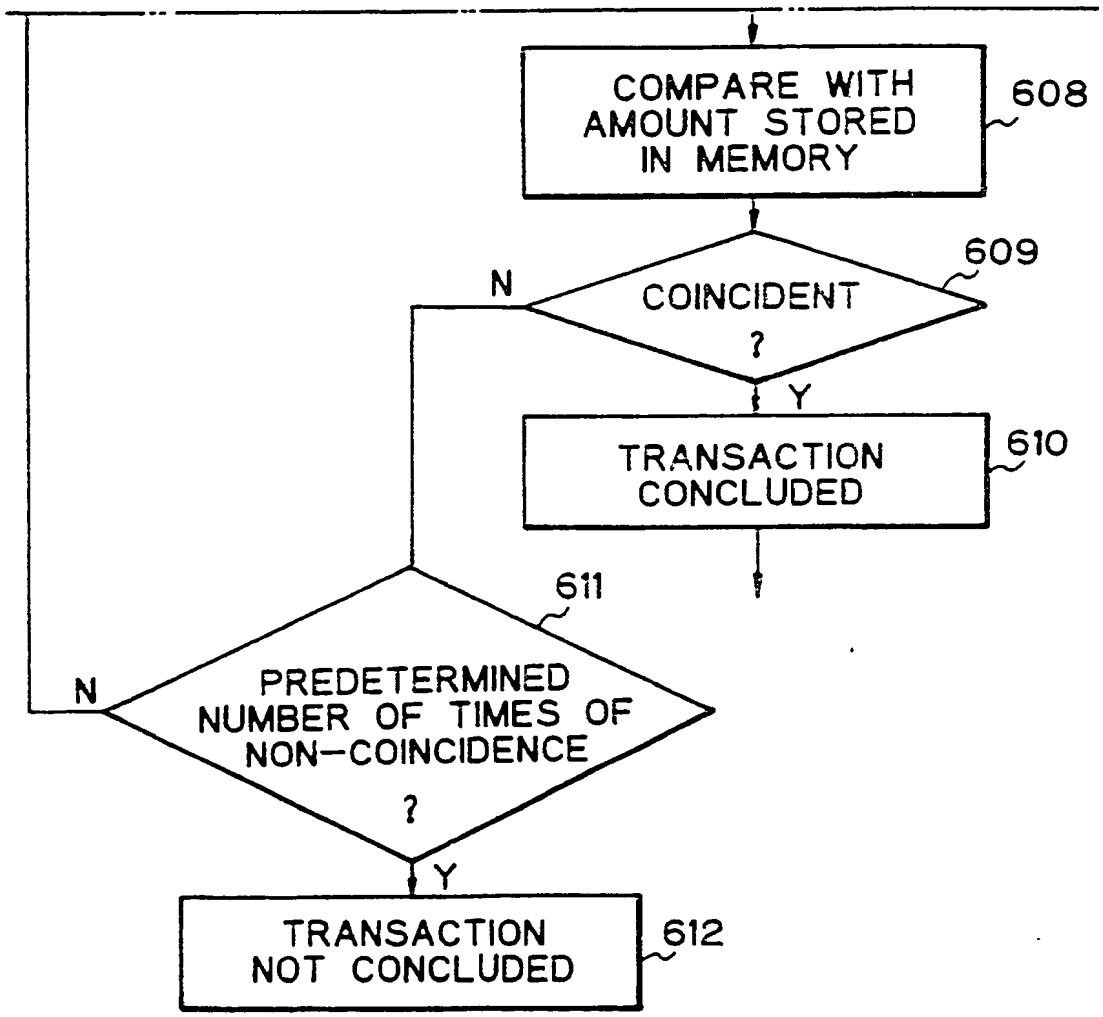

COMPARE WITH AMOUNT STORED IN MEMORY
608
COINCIDENT ?
609
N
Y
TRANSACTION CONCLUDED
610
PREDETERMINED NUMBER OF TIMES OF NON-COINCIDENCE ?
611
N
Y
TRANSACTION NOT CONCLUDED
612

Fig. 5

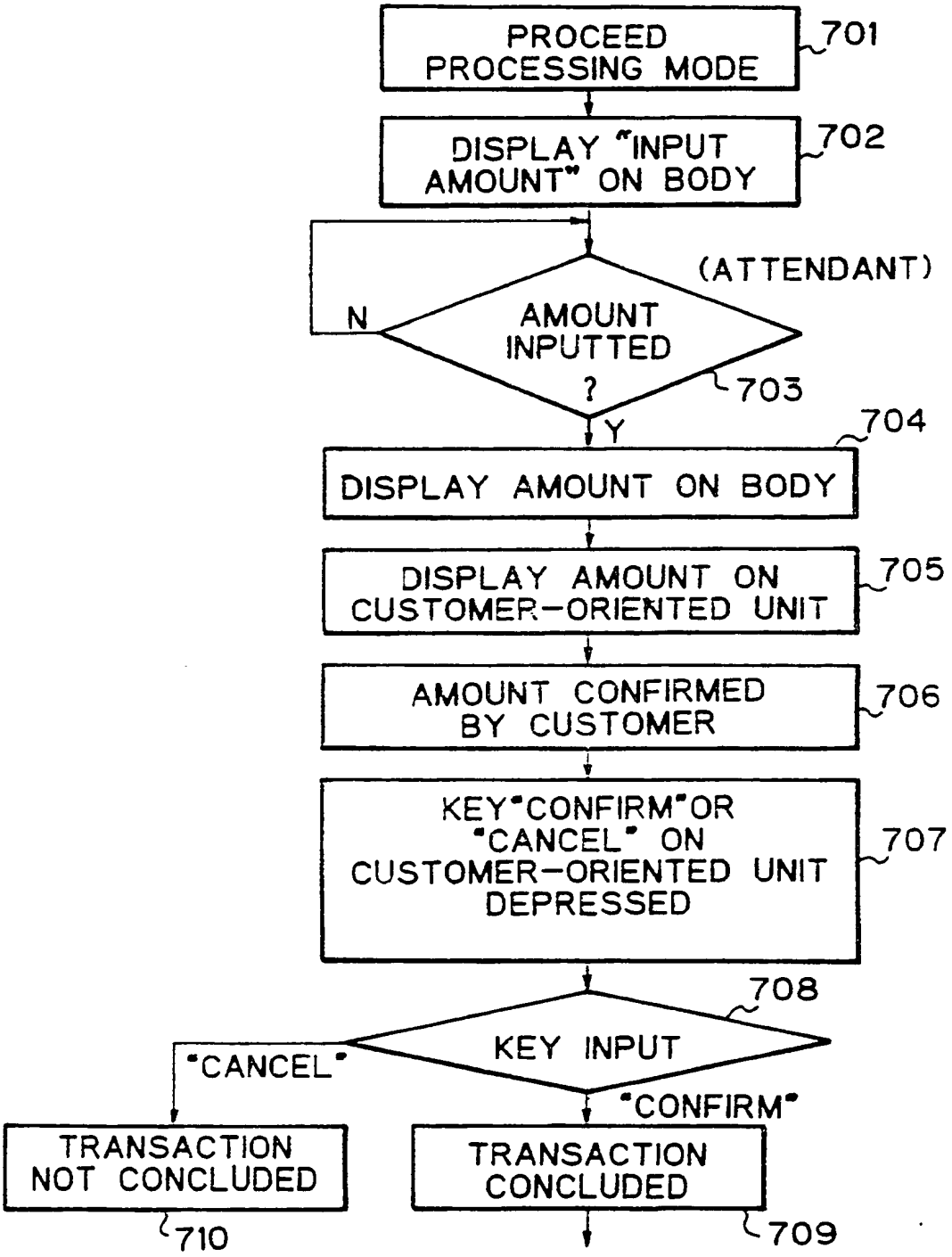

PROCEED PROCESSING MODE
701
DISPLAY "INPUT AMOUNT" ON BODY
702
(ATTENDANT)
N
AMOUNT INPUTTED ?
703
Y
704
DISPLAY AMOUNT ON BODY
DISPLAY AMOUNT ON CUSTOMER-ORIENTED UNIT
705
AMOUNT CONFIRMED BY CUSTOMER
706
KEY "CONFIRM" OR "CANCEL" ON CUSTOMER-ORIENTED UNIT DEPRESSED
707
708
KEY INPUT
"CANCEL"
"CONFIRM"
TRANSACTION NOT CONCLUDED
710
TRANSACTION CONCLUDED
709

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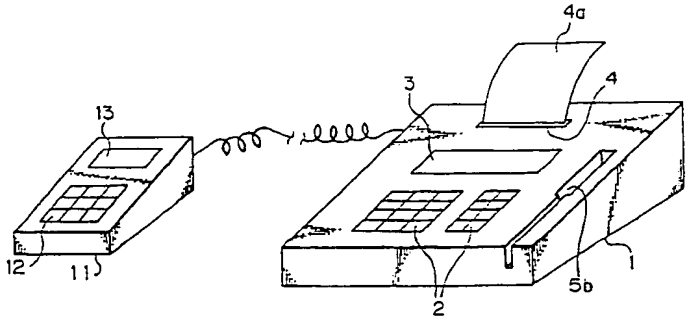
Fig. 1



EP 0 397 095 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 10 8603

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X,P,X	JP-A-6 129 059 (MATSUSHITA ELECTRIC INDUSTRIAL CO.) 20 December 1986 * the whole document & US-A-4843547 (FUYAMA ET.AL.) 27 June 1989 *	1-9	G 07 G 1/12
A	US-A-4 775 782 (MERGENTHALER ET.AL.) * abstract; claims 1, 5; figure 4 * * column 3, line 36 - column 4, line 24 *	1,2,5,6,9	
A	EP-A-0 266 798 (OMRON TATEISI ELECTRONICS) * abstract; claim 1; figures 1-4 *	1	
E	EP-A-0 376 619 (NCR CORPORATION) * the whole document *	1-9	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

G 07 G
A 47 F

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	13 June 91	GUIVOL,O.

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same catagory
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention

E: earlier patent document, but published on, or after the filing date
D: document cited in the application
L: document cited for other reasons

&: member of the same patent family, corresponding document